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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Shigeo Okuno

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WASHINGTON, DC 20006-1021

EXAMINER

TORRES RUIZ, JOHALI ALEJANDRA

ART UNIT

PAPER NUMBER

2838

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/528,838	Applicant(s) OKUNO, SHIGEO	
	Examiner JOHALI A. TORRES RUIZ	Art Unit 2838	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,6 and 7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-2 and 6-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This office action has been issued in response to the amendment filed on October 8, 2008.

2. Claims 3-5 have been cancelled by applicant.

3. Claims 1-2 and 6-7 are pending.

4. Applicant's arguments have been carefully and respectfully considered.

Rejections have been maintained where arguments were not persuasive. Also, new rejections based on the amended claims have been set forth. Accordingly, claims 1-2 and 6-7 are rejected, and this action is made FINAL, as necessitated by amendment.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gali et al. (U.S. Patent Number Re. 35,643), Chiang et al. (U.S. Patent Number 6,479,966), Kondo et al. (U.S. Patent Number 6,730,428), Gali et al. (U.S. Patent Number 5,633,575, hereinafter '575) and further in view of Gelbman et al. (U.S. 6,184,650).

7. Claim 1: Gali teaches a method for removing membranous lead sulfate deposited on electrodes of a lead acid battery due to sulfation (Col.1, Lines 41-44), featured by applying a pulse current having a short pulse width for dissolving the

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surface layer of said membranous lead surface deposited on said electrodes of said battery (Col.1, Lines 59-67) (Col.2, Lines 1-4) (Col.4, Lines 21-26) (It inherently has current).

In the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990) (The prior art taught carbon monoxide concentrations of “about 1-5%” while the claim was limited to “more than 5%.” The court held that “about 1-5%” allowed for concentrations slightly above 5% thus the ranges overlapped.). Gali teaches that to apply a pulse peaking at a necessary voltage a duration of said pulse should be less than 5 μ s. Peterson, 315 F.3d at 1330, 65 USPQ2d at 1382 (“The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages.”) Someone of ordinary skill in the art at would have the motivation to determine where in the disclosed range of less than 5 μ s the optimum results would be obtained.

Gali does not explicitly teach the pulse is a negative pulse nor that the pulse frequency is of 8000 to 12000 Hz. Gali does not explicitly teach a current value in a range of 10 to 120mA. Gali does not explicitly teach the pulse brings about a conductor skin effect.

Chiang teaches applying a negative pulse to a battery (Col.4, Lines 44-48).

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to have had applied a negative pulse to a battery in Gail to facilitate the removal of lead acid compound from the surface of an electrode (Col.4, Lines 57-58) as taught in Chiang.

Kondo teaches applying a pulse current with a frequency of 10kHz to a battery (Col.2, Lines 36-40).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have had applied a pulse current with a frequency of 10kHz to a battery in Gail to prevent the occurrence of sulfation (Col.2, Lines 36-40) as taught in Kondo.

'575 teaches a pulse bringing a conductor skin effect (Col.1, Lines 54-61) (Col.3, Lines 21-25).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have had a pulse bring about a conductor skin effect on Gail to enhance the cleaning of the battery plates (Col.3, Lines 21-25) as taught in '575.

Gelbman teaches patented techniques for reducing sulfation of lead-acid battery plates use a pulse of about 100mA (Col.1, Lines 45-54).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have had the teachings of Gelbman in the device of Gail to have had the crystals changed and the molecules dissolve back into the solution and create an active electrolyte (Col.1, Lines 54-57).

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8. Claim 2: Gali, Chiang, Kondo, '575 and Gelbman teach the limitations of claim 1 as discussed above. Gali teaches charging said lead acid battery while or after applying said pulse current to said battery (Col.4, Lines 32-35), to resolve the lead sulfate dissolved by applying said pulse current (Col1, Lines 18-20) (after the pulse dissolves the lead deposited on the electrode the lead resurfaces as lead dioxide).

9. Claim 6: Gali, Chiang, Kondo, '575 and Gelbman teach the limitations of claim 1 as discussed above. '575 teaches bringing about of the conductor skin effect results in the surface layer of said membranous lead sulfate deposited on said electrodes of said lead-acid battery being intensively dissolved (Col.1, Lines 27-30).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have had a pulse bring about a conductor skin effect on Gail to enhance the cleaning of the battery plates (Col.3, Lines 21-25) as taught in '575.

10. Claim 7: Gali, Chiang, Kondo, '575 and Gelbman teach the limitations of claim 1 as discussed above. Gali teaches said sulfate layer of said membranous lead sulfate deposited on said electrodes of said lead-acid battery is dissolved into fine particles without causing the membranous lead sulfate to fall off of said electrodes or to be suspended in an electrolytic solution (Col.1, Lines 32-37).

Response to Arguments

11. Applicant's arguments filed October 8, 2008 have been fully considered but they are not persuasive.

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12. In response to applicant's argument that Chiang does not disclose applying a negative pulse current. Chiang teaches applying a negative pulse current (Col.4, Lines 15-25 and 40-52) (Fig.2).

13. In response to applicant's argument that even though Gali teaches the application of a pulse width of less than $5\mu\text{s}$, the applicant has discovered that by applying a pulse width of $0.1\mu\text{s}$ to $1\mu\text{s}$ new and unexpected results are obtained, that the membranous lead sulfate can be sequentially dissolved into fine particles. Gali teaches that by applying a pulse width of less than $5\mu\text{s}$ the lead sulfation will be broken up (Col.1, Lines 32-37) or dissolved into particles.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHALI A. TORRES RUIZ whose telephone number is (571)270-1262. The examiner can normally be reached on M- F 9:30am-6pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Akm Ullah can be reached on (571) 272-2361. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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